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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,332	08/23/2001	Seong-Tack Lee	1567.1019	8125

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,332

Applicant(s)

LEE ET AL.

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "the assistant layer" in claim 1 is unclear because it lacks proper antecedent basis. Claim 19 refers to an "assistant layer". Accordingly, claim 1 has been treated as inclusive of forming the organic luminescent layer either on a first electrode layer or on an overlying assistant layer. (Claims 2-13 are rendered unclear only by this feature of parent claim 1.)

The terms "smooth" and "steep" in claims 14-18 are relative terms which render the claim indefinite. The terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The examiner has found references to laser beams that define the term "inclination" using units of degrees, but not as used in the specification (i.e., with units of %/micron). The term appears generally to refer to the energy distribution diagram of Fig. 15, but it is not clear what the % and the microns refer to. Accordingly, the term "inclination" as used by Applicant is vague and indefinite.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-2, 13, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Nirmal et al. (U.S. Patent 6,358,664, hereafter '664).

Claims 1 and 19'664 teaches a method for fabricating an organic electroluminescent display (col. 2, lines 61-67), comprising the steps of:

forming a first electrode layer of indium tin oxide on a transparent substrate (col. 13, lines 10-15; col. 15, lines 34-41);

forming assistant layers of PEDT/PSS and TPD on the first electrode layer (col. 15, lines 37-55)

forming an organic luminescent layer on the assistant layer by scanning a donor film disposed on the substrate using a laser beam (col. 16, line 55-col. 17, line 13);

removing the donor film (col. 14, line 61-col. 15, line 4); and

forming a second electrode layer on the organic luminescent layer (col. 17, lines 30-40).

Claim 2: The laser beam dithers with respect to an advancing direction of the beam (col. 17, lines 8-10)

Claim 13: The luminescent layer may be based on PPV (col. 16, lines 56-65).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 3-12 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nirmal '664, as applied to claim 2, above, and further in view of Littman et al. (U.S. Patent 5,688,551, hereafter '551) and Kwon et al. (U.S. Patent 6,242,140, hereafter '140).

'664 is discussed above. It does not discuss the production of multi-color electroluminescent (EL) devices. However, the construction of multi-color devices by printing multiple colors of electroluminescent material is extremely well known in the art. See, for instance, Littman '551, which teaches that laser thermal transfer of blue, red, and green materials to form electroluminescent devices (col. 5, lines 10-24; Figs. 3a-3c). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '664 to have formed a multicolor device with a reasonable expectation of success because Littman '551 teaches that multicolor EL devices are of interest and may be produced by methods of laser thermal transfer.

Claims 3-4 and 7: '664 is discussed above, but does not explicitly teach that the laser beam is radiated from a singled laser unit. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. '140 teaches that laser beams for thermal transfer printing multi-color areas may be produced from a single laser unit split into a plurality of beams, synchronized to simultaneously dither adjacent patterns (col. 7, lines 5-13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such an arrangement as the particular laser arrangement of '664 and '551 because '140 teaches that such arrangements are suitable for forming multi-color areas of electronic devices.

Claim 4: '140 does not explicitly teach splitting the beam into more than two beams. However, col. 7, lines 11-14 indicates that a plurality of split beams may be used, and col. 7, lines 21-23 indicate that a "plurality" is not limited to merely two. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have split the beam into more than two beams in order to have formed a greater number of colored areas simultaneously.

Claim 7: The multiple beams may come from multiple lasers (col. 7, lines 14-15).

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Claim 5: '140 teaches that at least two laser beams may be radiated from at least two laser units and overlapped (col. 7, lines 21-28) in order to increase the scanning rate by doubling the intensity. This passage indicates only that the intensity is doubled. There is no indication that the energy distribution of the combined beam is different from that of either component beam. Accordingly, it appears that the component beams have identical energy distributions to each other and the overall beam. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such an arrangement as the particular laser arrangement of '664 and '551 because '140 teaches that such arrangements are suitable for forming multi-color areas of electronic devices.

Claim 6: '140 teaches the pattern may be formed by dithering at least two laser beams from at least two laser units modulated out of phase (col. 7, lines 29-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such an arrangement as the particular laser arrangement of '664 and '551 because '140 teaches that such arrangements are suitable for forming multi-color areas of electronic devices.

Claims 8-9: The dithering rate should be greater than the scanning (i.e., advancing) rate such as 100-1000 kHz (col. 6, lines 18-20).

Claim 10: The dithering may be in the form of a sine wave (col. 5, lines 62-65).

Claims 11-12: The laser beam may be an elliptical (oval) shape, with the longitudinal direction parallel to the scan direction of about 20-500 microns and lateral diameter of 20-50 microns (col. 6, lines 21-33).

Claims 14-18: '140 teaches forming the laser beam by mixing other laser beams. The intensity distribution of the laser beams is shown in Fig. 6, which appears substantially identical to Applicant's Fig. 15.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Tuesday-Friday and alternate Mon, 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read "Michael Cleveland".

Michael Cleveland

Patent Examiner

December 14, 2003